THE USE OF TIME AND ACADEMIC PERFORMANCE OF COLLEGE STUDENTS: DOES STUDYING MATTER?

HONORS PROJECT

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by

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ABSTRACT

Previous studies have find mixed results regarding the impact of studying upon academic performance; however, none of these studies include in their analysis time management skills and behavior. A time diary was used to collect data on use of time by students enrolled in three agricultural economics courses during the week of the first midterm, Fall Quarter 1997. The students also completed a instrument that asked for (1) permission to examine their college records and (2) a set of 34 questions designed to measure the extent to which they manage and organize time. These questions, copyrighted as the *Time Management Behavior Scale*, were obtained with permission from Dr. Therese Hoff Macan, Department of Psychology, University of Missouri - St. Louis.

A total of 94 useable observations were obtained. The average hourly use of time by these 94 students during the week surveyed was: sleeping (55.2), studying (20.7), planned recreation/leisure (19.4), in-class (16.8), job (12.2), travel time (10.5), television (10.1), eating (8.0), personal hygiene (7.3), student /organization activities (4.1), other (2.2), and telephone (1.5).

Regression analysis found that students who were organized in their approach to completing projects had higher quarter grade point averages. Also positively related to GPA was time spent studying. However, an extra hour of study time increased Fall Quarter grade point average by only 0.015 points. Thus, a student can increase his or her GPA, by increasing the amount of time, he or she studies, however a substantial change in GPA will require a substantial increase in study time.

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INTRODUCTION / REVIEW OF LITERATURE

Time management is an important issue to both college students and educators. Educators are concerned that students spend sufficient time, especially study time, on academics, while students are concerned with meeting the numerous demands on their time. As Macan *et al.* (p. 760) explains, "In trying to read all the books and chapters assigned, meet paper deadlines, and participate in extracurricular activities, college students may become overwhelmed with feelings that there is not enough time to complete all their work adequately." Given this time pressure, successful time management is considered important by college students. "Indeed, a survey showed that 67% of the undergraduates at our university reported that their greatest personal need (of 40 needs on a checklist) was 'to manage my time more effectively'" (qtd. in Britton and Tesser, p. 406).

An important consideration in evaluating the use of time by students is an understanding of the impact of amount of study time on academic performance. A review of the literature finds mixed results with regard to this relationship. Frisbee, Pappalardo, and Schmidt generally find a positive and significant relationship between studying and academic performance. On the other hand, Schuman *et al.* (p. 945) analyze four different data sets, and find ". . . at best only a very small relation between amount of studying and grades." Earlier literature cited in Pappalardo and Schuman *et al.* generally find little to no relationship.

A related but different set of studies has examined the impact of time management skills of students upon academic performance. These studies also find mixed results. Macan *et al.* and Britton and Tesser find that time management skills and academic performance are

positively related. In contrast, Long *et al.* finds that self-management is not related to both extrinsic motivation for academic involvement and grade point average, while Kember *et al.* reports that there is no significant relationship between hours of independent study, class attendance, and GPA. Last, Trueman and Hartley find a rather modest, but positive, significant relationship between time management and academic performance.

A reasonable hypothesis is that time spent studying and skills in the use of time affect academic performance. Time spent studying is a measure of quantity of effort. Time management skills include such items as setting goal and priorities, using time management mechanics (such as making lists), perceived control over time, and the preference for organization in the use of time (Macan *et al*). These skills may be related to how effectively someone uses time.

No study has incorporated both variables in its analysis. The failure to include both variables may lead to a mis-specified analysis, thus limiting the ability of the analysis to discover the underlying relationships. This study proposes to conduct an analysis which includes both variables.

A time diary was collected from students enrolled in three agricultural economics classes offered Fall Quarter 1997 at The Ohio State University. Those surveyed also were asked to complete the Macan *et al. Time Management Behavior Scale*, which measured time management factors. The data collected from these surveys, along with academic and personal characteristics of the student, are analyzed using multivariate regression analysis.

The procedures used to collect the data are described in the next section, followed by a descriptive analysis of the time diary data and characteristics of the surveyed students. Next, the regression analysis is discussed. Conclusions and implications are then drawn.

DATA COLLECTION PROCEDURES

Students from three classes at Ohio State University completed a "time diary" during one week of Fall Quarter 1997 (see Appendix 1). The courses in which students were surveyed included an introductory course in agricultural economics, an introductory course in agribusiness management, and an upper-level economic policy course. The first course contained freshmen through seniors, while the second course contained sophomores through seniors. The policy course contained only seniors. To standardize the collection of data, the time diaries were collected during the week of the first midterm.

A time diary can use either pre-assigned categories or allow respondents to describe their time use in their own words. If the latter approach is used, the researcher must classify the reported time. Both approaches are subject to inaccuracies in reporting and coding, either by the respondent or researcher. This study used the following pre-assigned categories: in-class, studying, eating, sleeping, job, travel time, telephone, television, planned recreation/leisure, student organization/activities, personal hygiene, and other.

According to Robinson and Godbey (p. 5), "the time diary is a sort of social microscope that allows us to examine facets of daily life that are not otherwise observable." Time diaries can be collected for any length of time, but a trade-off exists between length of time surveyed and accuracy of the time use data. On the one hand, numerous unexpected and random factors can affect short-term time use, but are averaged out over a longer time period. Thus, a longer time period provides data which is more reflective of normal time use. On the other hand, the burden on respondents increases as the collection period increases. Hence, the willingness to record accurate data may decline. Based on their long-term survey of how Americans use time, Robinson and Godbey (pp. 289-290) recommend a one-week survey period over a one-day survey period. Their recommendation is adopted by this study.

Despite its limitations, previous research and experience suggest that the time diary provides accurate, usable information (Robinson and Godbey, p. 289-290). Reed *et al.* (p. 1035) notes that ". . . a self-report form allowing a determination of the number of hours spent in study outside of class is a practical and a reasonably accurate approach for investigating expenditure of study time for college students. The specific time diary instrument used in this study has been used for several years as part of a class assignment. Thus, the survey instrument has been tested through previous student use which should improve its face validity.

Students also completed a 34-item questionnaire designed to measure individual time management behaviors. This questionnaire, the *Time Management Behavior Scale (TMB)*, was obtained from Therese Hoff Macan, of the University of Missouri - St. Louis. According to Macan *et al.* (p. 761), "we designed the present instrument to assess the behaviors critical to the construct of time management as defined in the popular literature[1]." These behaviors are categorized into four different attributes: (1) preference for organization in completing tasks, (2) setting goals and priorities, (3) perceived control over time, and (4) use of time management techniques, such as making lists. The questions are scored on a five-point scale, with five indicating a strong preference and one indicating a weak preference for (1) being organized in completing tasks (2) setting goals and priorities, (3) perceiving oneself as being in control of time, and (4) using time management techniques. These variables subsequently will be referred to as: organize, goals, control and mechanics.

Last, if the student gave permission, the following variables were collected from the students' college record: age, gender, hours taken and completed during the quarter, ACT score, SAT score, cumulative grade point average, and fall quarter grade point average. ACT

[1] An example of this is Lakein's book, *How to Get Control of Your Time and Your Life*.

scores were far more common than SAT scores for the respondents. Thus, if only an SAT score was available, it was converted to an equivalent ACT score using the analysis of Doran, *et al.*

One hundred forty students completed time diaries. Students who did not complete the *TMB*, those that did not give permission to obtain data from the College Office, and those with incomplete data in the College Office were eliminated from the study. First quarter freshmen were eliminated, because they are in a transition period during which many adjustments, both academic and non-academic, are occurring. All first quarter transfer students were eliminated because of incomplete data in the College Office.

In total, 94 useable observations were obtained. The time diary data from these 94 students were compared with the time diary data from the 46 students that were eliminated. Although some minor differences existed between the groups, there were no statistically significant differences.

DESCRIPTION OF THE SAMPLE

The 94 respondents who comprise the data set were distributed as follows: freshmen, four percent; sophomores, twenty-three percent; juniors, thirty-five percent; and seniors, thirty-seven percent. Sixty-four percent of the respondents were male (see Table 1). The average age was 20.9 years, with the oldest being 29. No respondent reported being the primary care giver of another person. Four percent were engaged, none were married, and two percent had children. In summary, the respondents broadly can be described as traditional students.

Table 1 presents a comparison of gender, ACT test scores, age, and cumulative GPA of the respondents with both students enrolled in the College of Food, Agricultural, and

Environmental Sciences and students of Ohio State University. Respondents had approximately the same GPA, but were more often male, were younger, and had a lower ACT test score. These differences should be kept in mind when interpreting the results.

Table 2 presents descriptive statistics for selected variables which are used in the regression analysis. The average respondent had completed 114 quarter hours prior to Fall Quarter 1997 and was enrolled in 16 quarter hours at the time the surveys were conducted. The respondents, on average, were close to the midpoint of the five-point Likert scale for goals, control, and mechanics. In contrast, the score on organize was 3.9, indicating that respondents had a preference for being organized in their use of time. A three point range existed on the observed values of the time management variables, indicating that substantial variation existed among the respondents.

DESCRIPTION OF TIME USE

The following discussion focuses on the average use of time reported by the respondents. However, the use of time varied substantially among the respondents. For example, the number of hours reported as study time ranged from 1 to 58.5 hours. This variation needs to be kept in mind when interpreting the data.

Academic Time Use

A commonly quoted rule of thumb is that, for each hour spent in-class, college students should spend two hours studying out of class. As Table 1 and Figures 1 and 2 show, the average respondent **did not** spend twice as many hours studying as in-class. They spent 16.8 hours in-class and 20.7 hours studying, for 1-to-1.2 ratio. Only 17 percent of the respondents followed the rule of thumb.

Students reported studying an average of 2.5 more hours during the survey week than usual. This was expected because the survey was given during the week of the first midterm. The respondents claim to usually spend 18.2 hours/week studying, for a ratio of 1-to-1.1. Robinson and Godbey (p. 175) also find a 1-to-1 ratio between study time and time spent in-class in their time diary survey of college students.

Time spent studying and in-class summed to 37.5 hours. Even when adjusted for the greater amount of time spent studying during the survey week, they equaled 35 hours. Thus, the respondents, were by conventional definition, nearly "fully employed" in academics.

Biological Necessity Time Use

The respondents reported spending 55.2 hours/week sleeping, 8.0 hours/week eating, and 7.3 hours/week on personal hygiene. In total, the respondents spent 70.5 hours/week or 43 percent of their time on these biological necessities. After removing time spent on biological necessities, students have approximately 100 hours to be used as either free or productive time, an amount similar to that reported by Robinson and Godbey in their long-term survey of how Americans use time. The respondents spent nearly 35 percent of their remaining time on academic work.

Job Time Use

On average, the respondents spent 12.2 hours/week working. This is smaller than time spent in-class and time spent studying. Twenty-seven percent of students did not work during the survey week, while 22 percent reported working at least 20 hours/week. Only three percent reported working at least 40 hours/week.

Leisure Time Use

Included in this category are hours spent on the phone, watching television, and on planned recreation/leisure activities. Respondents averaged 1.5 hours on the phone and 10.1 hours watching TV. Eleven percent reported watching TV more than 20 hours/week. Similar to classes, TV programs are scheduled at regular times and, thus, provide ". . . anchor points in time around which other activities can be regulated" (Robinson and Godbey, p. 136-137).

Planned recreation and leisure, not including time devoted to television viewing, is a large part of college life. The respondents averaged 19.4 hours/week on planned recreation/leisure activities. Thirty-nine percent spent more than 20 hours/week on planned recreation/leisure activities. In other words, planned recreation/leisure is comparable to a part-time job for these students.

Other Time Use

Today, travel time is necessary to accomplish another task, such as attending class, going to work, or participating in planned recreation/leisure activities. In addition, travel is sometimes a personal choice as a leisure activity. Respondents reported spending 10.5 hours/week traveling. Similarly, "Americans spend just over 10 hours a week in travel" (Robinson and Godbey, p. 117).

Student activities also were a significant part of students' lives. Fifty-seven percent of the respondents participated in at least one student activity throughout the week. The average for all respondents was 4.1 hours/week.

ANALYSIS OF ACADEMIC PERFORMANCE

The purpose of this analysis is to assess the variables associated with academic performance, including the amount of time spent studying and time management behavior. Academic performance is measured as Fall Quarter 1997 GPA. The independent variables hypothesized to affect academic performance are discussed in the next section.

Statistical Model

Previous research has documented extensively the positive relationship between scholastic aptitude and academic performance. Thus, to ascertain the impact of time use and time management skills on academic performance, this variable is included as an independent variable in the regression model.

Study time is a self-reported measure of time spent studying for the given week. Following common conventional wisdom, time spent studying is expected to be positively related to academic performance.

The four time management factors identified in the Macan *et al Time Management Behavior Scale* are included in the model. The four factors are (1) the preference for being organized in completing tasks, (2), the preference for setting goals and priorities, (3) the perception that the individual can control how time is used, and (4) a preference for using common time management mechanisms, such as making lists. Conventional wisdom suggests that these variables should be positively associated with academic performance.

The other variables included in the model are commonly used in analyzing academic performance. Gender is defined as a dummy variable, with males coded as 1 and females coded as 0. Cumulative hours represent the number of hours completed as of the end of Summer Quarter 1997. Cumulative hours completed is often used as one measure of

academic maturity. Fall Quarter credit hours is the number of hours the student was taking during the week of the survey. This is one measure of the amount of academic work a student has undertaken.

In summary, the following regression equation was estimated:

Academic Performance = f (Organize, Goals, Control, Mechanic, Study Time, Gender, Cumulative Hours, ACT, Fall Quarter Credit Hours)

Results

The linear regression results are presented in the first column of Table 4. Consistent with previous studies, ACT is a significant determinant of academic performance. Study time also is significant. However, each additional hour spent studying during the week increased quarter GPA by only 0.015 points. This relationship implies that a 10-hour increase in study time would increase GPA by only 0.15 points. Ten hours is probably a reasonable upper bound for most students, unless they redefine their priorities.

Among the time behavior variables, the only one which is significant is the preference for being organized. The greater the preference for being organized in completing projects, the higher academic performance.

Gender is significant. The coefficient indicates that after controlling for the other variables, including study time and time management skill, males achieved a 0.243 higher quarter GPA. As a comparison, the unconditional GPA for male respondents was 2.81 while the unconditional GPA for females was 2.86. Thus, the GPA advantage of males emerged only after controlling for other variables. Schmidt reported a similar finding in one of his analyses. The findings suggest that males may be more efficient in their use of study time.

Neither cumulative hours nor number of quarter hours were significant. Thus, neither the class rank of the student nor the course load during the quarter affected GPA for the respondents[2].

To test the sensitivity of the results, two types of analyses were conducted. One involved using alternative model formulations. No strong reason exists for believing that the linear model is necessarily the best model specification. Thus, the above results may be dependent on the use of the linear model. Therefore, four other common functional forms were analyzed: inverse, ln-linear, linear-ln, and double ln. These models involve nonlinear transformations of the dependent and/or independent variables. The inverse model involves taking the inverse of the dependent variable while keeping the independent variables as they are in the linear model. The ln-linear model involves taking the natural logarithm of the dependent variable, but keeps the independent variables as they are in the linear regression model. The linear-ln model takes the natural logarithm of the independent variables, but keeps the dependent variable in its linear form. The double ln model takes the natural logarithm of both sides of the equation.

The four variables which are significant in the linear model remain significant in all of the alternative models. Control and goals, insignificant variables in the linear regression equation, become significant in one and two of the alternative models, respectively. These results suggest that the empirical findings are robust to alternative model specifications.

Regression results are often sensitive to observations called outliers. Outliers may vary significantly from the usual empirical relationship. Hence, a sensitivity test is used to

[2] Previous studies suggest that type of class also may affect GPA. This was not expected to hold in this study because all of the courses were in the same subject area. To check this expectation, class was included in the regression as a set of dummy variables. As expected, class was found to be insignificant.

identify the outlier observations. The regression equation then was re-estimated with the outliers removed. The significance or insignificance of the variables did not change.

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

Previous studies have examined the impact on academic performance of either the amount of time spent studying or time management ability. Both sets of studies find mixed evidence for the relationship. This study is the first to include both variables in the same study. Failure to include both variables may account for the mixed results.

Quantity of time spent studying was collected for the week of the first midterm from students enrolled in three agricultural economics classes. The classes were offered Fall Quarter 1997 at Ohio State University. The amount of time spent in-class plus the amount spent studying totaled nearly 40 hours, implying that by conventional standards students were nearly "fully employed" in schoolwork. Excluding work, the other categories of time use were generally comparable to that of other Americans, as reported in Robinson and Godbey's long-term survey of how Americans spend their time. Thus, after adjusting for the fact that they attend class and study course material, the use of time by these student respondents does not appear to differ much from the average American.

The regression analysis finds that amount of study time positively impacts quarterly GPA. However, the marginal impact is small since each additional hour spent studying increases quarterly GPA by only 0.015 points. Thus, a student who wants to substantially improve his or her GPA will have to substantially increase study time, probably implying that the student will need to reprioritize his or her goals.

Time management skills significantly impact academic performance. In particular, a preference for being organized in completing tasks is associated with a higher GPA. Thus, a

student who wants to substantially increase GPA needs not only to substantially increase the quantity of time spent studying, but also will need to improve their time management abilities. Unfortunately, the limited evidence does not support the idea that time management behavior can be changed easily (for example, see Macan *et al.*).

Future research could extend this analysis by conducting a survey over the quarter to determine if time use varies over the quarter. Some studies have found that the impact of studying on academic performance depends on when the studying is done during the quarter. Another possible research topic is the interaction between type of learning style preferred by a student and the value of in-class and study time. For example, verbal learners probably receive more benefit from being in-class than from studying outside class.

REFERENCES

Britton, Bruce K., and Abraham Tesser. "Effects of Time-Management Practices on College Grades." *Journal of Educational Psychology* 83.3 (1991): 405-410.

Dorans, Neil J., C. Felicia Lyu, Mary Pommerich, and Walter M. Houston. "Concordance Between ACT Assessment and Recentered SAT I Sum Scores." *College and University* 73.2 (1997): 24-34.

Frisbee, William R. "Course Grades and Academic Performance by University Students: A Two-Stage Least Squares Analysis." *Research in Higher Education* 20.3 (1984): 345-365.

Kember, David., Qun Wang Jamieson, Mike Pomfret and Eric T.T. Wong. "Learning Approaches, Study Time and Academic Performance." *Higher Education* 29 (1995): 329-343.

Lakein, Alan. *How to Get Control of Your Time and Your Life*. New York: Signet, 1973.

Long, James D., Patricia Gaynor, Alexander Erwin, and Robert L. Williams. "The Relationship of Self-Management to Academic Motivation, Study Efficiency, Academic Satisfaction, and Grade Point Average Among Prospective Education Majors." *Psychology: A Journal of Human Behavior* 31.1 (1994): 22-30.

Macan, Therese H., Comila Shahani, Robert Dipboye, and Amanda Peek Phillips. "College Students' Time Management: Correlations With Academic Performance and Stress." *Journal of Educational Psychology* 82.4 (1990): 760-780.

Pappalardo, Janis Ann K. *Financial Aid, Labor Supply-Study Time Trade-Offs, and Academic Performance Production: An Economic Analysis of Students Resource Allocation*. Unpublished Ph.D. dissertation. Cornell University, Ithaca, New York, 1986.

Reed, Patrick, Debra Puchalski, Carolyn Denham, and William B. Michael. "The Validity of an Academic Study-time Questionnaire for College Students." *Educational and Psychological Measurement* 44 (1984): 1031-1036.

Robinson, John P. and Geoffrey Godbey. *Time for Life: The Surprising Ways Americans Use Their Time*. University Park: Pennsylvania State University Press, 1997.

Schmidt, Robert M. "Who Maximizes What? A Study in Student Time Allocation." *The American Economic Review* 73.2 (1983): 23-28.

Schuman, Howard, Edward Walsh, Camille Olson, and Barbara Etheridge. "Effort and Reward: The Assumption that College Grades Are Affected by Quantity of Study." *Social Forces* 63.4 (1985): 945-966.

Trueman, Mark and James Hartley. "A Comparison Between the Time-Management Skills and Academic Performance of Mature and Traditional-Entry University Students." *Higher Education* 32 (1996): 199-215.

White, Kenneth J.. *Shazam Econometrics Computer Program User's Reference Manual*, Version 8.0. Vancouver, Canada: McGraw-Hill Company, 1997.

Table 1: Comparison of Selected Characteristics of Respondents with College and University Data, Ohio State University, Fall Quarter 1997

Variable	Sample	College of Food, Agricultural, and Environmental Sciences	Ohio State
Percent of male students	64.0%	56.0%	52.1%
ACT test score	22.6	22.9	23.6
Age	20.9	22.5	21.8
Cumulative GPA	2.8	2.7	2.8

Sources: Original Data; Dr. Jill Pfister, College of Food, Agricultural, and Environmental Sciences, The Ohio State University; Greek Affairs Office, The Ohio State University

Table 2: Descriptive Statistics of Respondents, College of Food, Agricultural, and Environmental Sciences, Ohio State University, Fall Quarter 1997

Variable	Mean	Std. Dev.	Min.	Max.
Fall Quarter GPA	2.8	0.7	0.9	4.0
Organize	3.9	0.7	2.1	5.0
Goals	3.0	0.7	1.6	4.6
Control	3.3	0.7	1.6	4.6
Mechanics	2.8	0.8	1.3	4.4
ACT Score	22.6	4.1	8.0	31.0
Cumulative Hours	114.4	43.9	40.0	203.0
Fall Quarter Hours	16.2	2.8	5.0	25.0

Source: Original Data

Table 3: Descriptive Statistics for Respondent Use of Time During the First Midterm Week, College of Food, Agricultural, and Environmental Sciences, Ohio State University, Fall Quarter 1997

Variable	Mean (Hours)	Std. Dev. (Hours)	Min. (Hours)	Max. (Hours)
In-Class	16.8	4.0	5.0	28.5
Studying	20.7	9.7	1.0	58.5
Eating	8.0	2.9	0.0	15.0
Sleeping	55.2	6.4	38.0	67.0
Personal Hygiene	7.3	3.5	0.0	21.0
Job	12.2	11.8	0.0	50.0
Travel	10.5	4.8	0.0	19.0
Phone	1.5	2.0	0.0	13.5
TV	10.1	8.6	0.0	45.0
Recreation	19.4	10.0	2.5	62.5
Student Activities	4.1	7.3	0.0	46.5
Other	2.2	4.2	0.0	25.8

Source: Original Data

TABLE 4: Regression Models of Fall Quarter 1997 GPA; College of Food, Agricultural, and Environmental Sciences; Ohio State University

Independent Variable		Linear Model	Inverse Model	Ln Linear Model	Linear Ln Model	Ln Ln Model
Organize	Coefficient	0.1663**	-0.0496**	0.0867**	0.6376**	0.3295**
	Std. Error	0.0988	0.0214	0.0418	0.3624	0.1519
Goals	Coefficient	0.0544	-0.0294*	0.0404	0.1543	0.1207
	Std. Error	0.1024	0.0222	0.0433	0.2955	0.1239
Control	Coefficient	0.1116	-0.0096	0.0351	0.4781*	0.1656*
	Std. Error	0.0925	0.0200	0.0391	0.2919	0.1224
Mechanic	Coefficient	0.0319	0.0135	-0.0068	0.0401	-0.0414
	Std. Error	0.0980	0.0212	0.0414	0.2634	0.1105
Study time	Coefficient	0.0155**	-0.0022*	0.0056**	0.2144**	0.0705*
	Std. Error	0.0066	0.0014	0.0028	0.1161	0.0487
Gender	Coefficient	0.2435*	-0.0574**	0.1112*	0.2535*	0.1140*
	Std. Error	0.1329	0.0288	0.0562	0.1378	0.0578
Cumulative Hours	Coefficient	0.0007	-0.0002	0.0004	0.0396	0.0275
	Std. Error	0.0013	0.0003	0.0005	0.1294	0.0543
Fall Hours	Coefficient	0.0054	-0.0010	0.0025	0.1620	0.0675
	Std. Error	0.0221	0.0048	0.0094	0.3240	0.1359
ACT	Coefficient	0.1042***	-0.0176***	0.0409***	2.0363***	0.8011***
	Std. Error	0.0149	0.0032	0.0063	0.3109	0.1304
Constant	Coefficient	-1.4333**	1.1756***	-0.7427***	-6.5129***	-2.7912***
	Std. Error	0.6559	0.1421	0.2773	1.4450	0.6060
R^2		0.4616	0.3568	0.4274	0.4221	0.3954

Significance levels: 10% - *, 5% - **, 1% - ***

**Figure 1: Student Average Use of Time, 1st Midterm Week,
College of Food, Agricultural, Environmental Sciences, Ohio State University, Fall 1997**

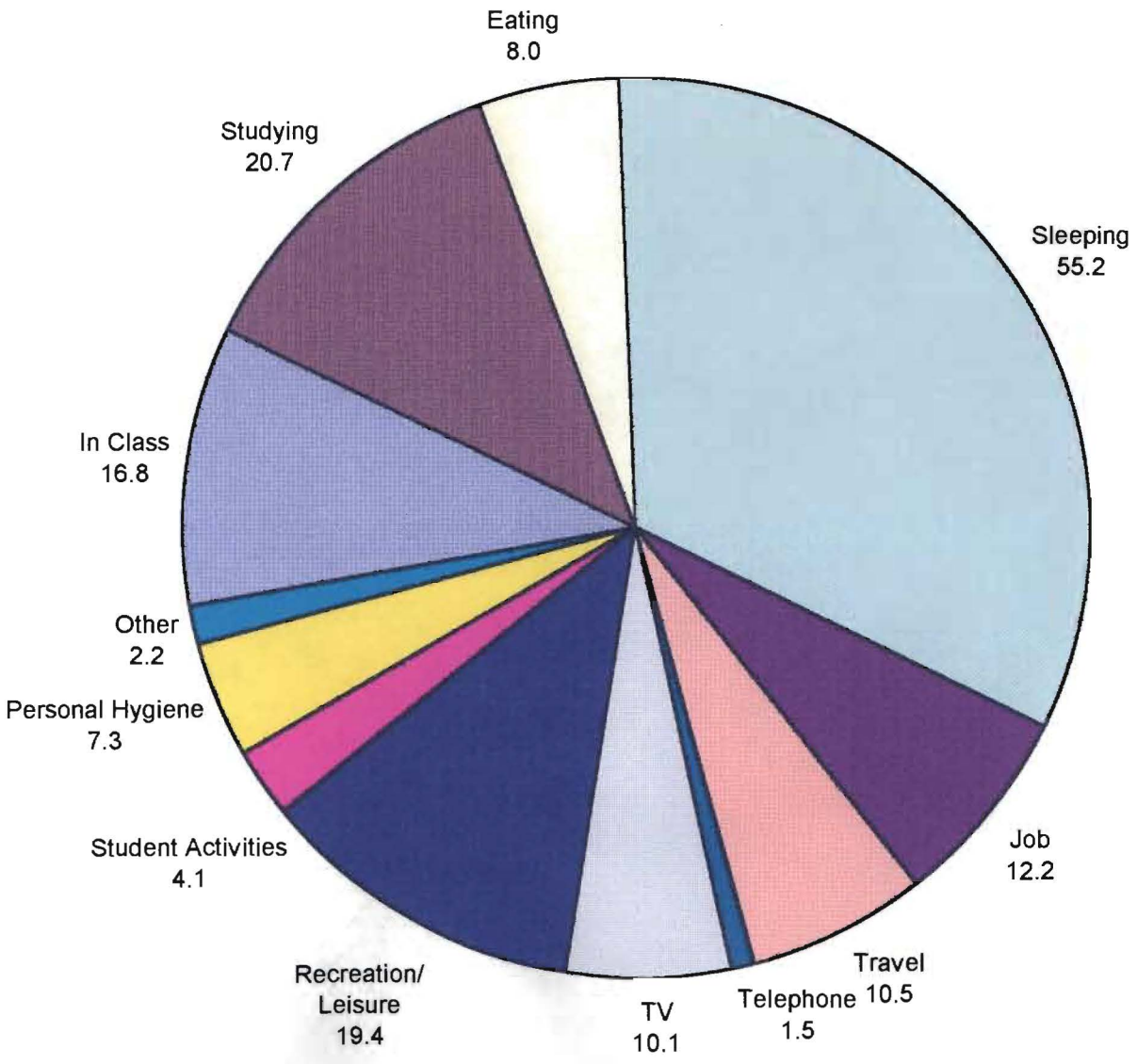
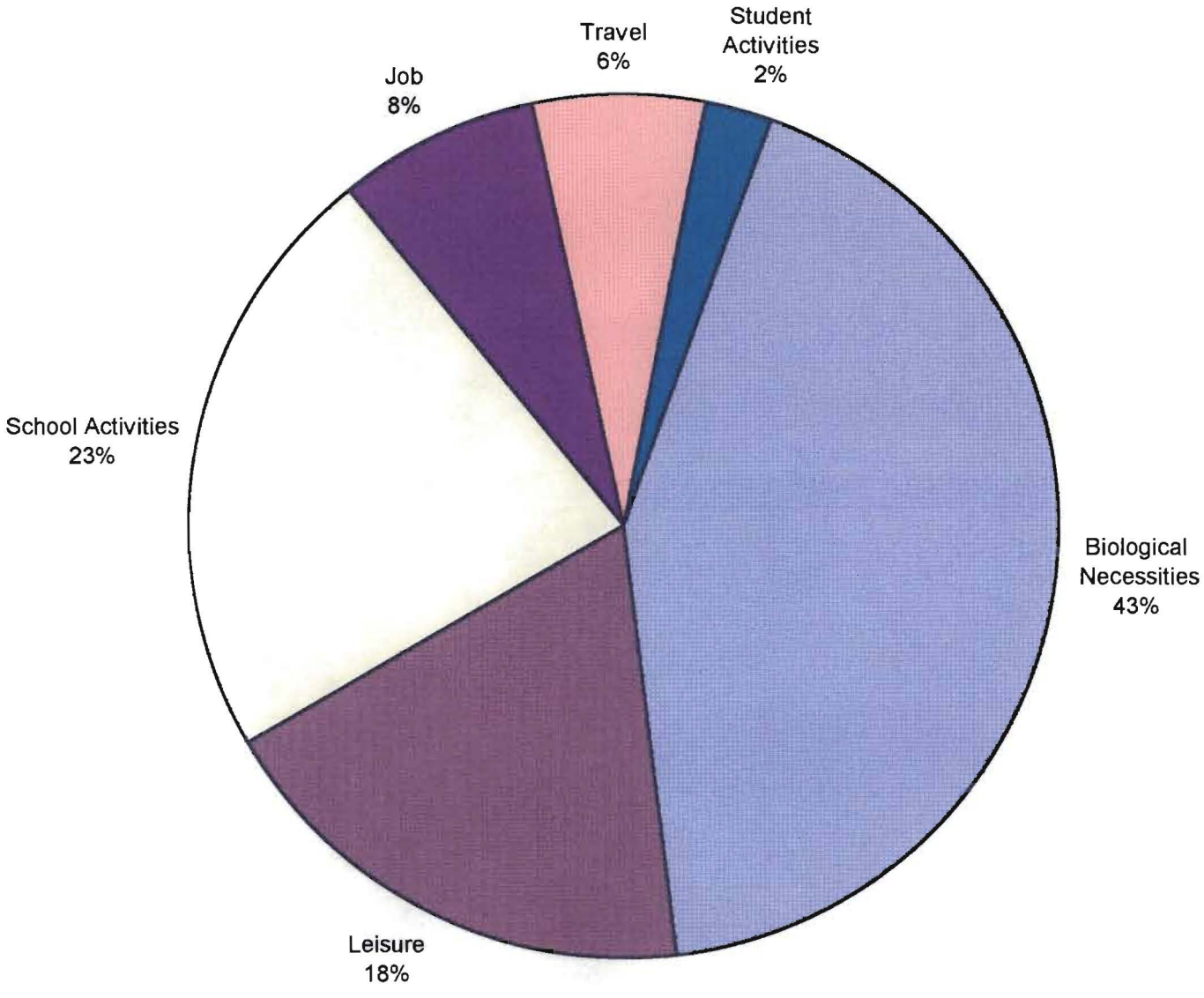


Figure 2: Percent Distribution of Student Use of Time by Aggregate Categories, 1st Midterm Week, College of Food, Agricultural, & Environmental Sciences, Ohio State University, Fall 1997



Appendix 1

NAME:_____

Summary of Time
October 10 - October 17, 1997

In class **(IC)**	_____
Studying **(ST)**	_____
Eating **(E)**	_____
Sleeping **(SL)**	_____
Job **(J)**	_____
Travel Time **(TT)**	_____
Telephone **(TEL)**	_____
Television **(TV)**	_____
Planned recreation/leisure **(PR)**	_____
Student organization/activities **(ACT)**	_____
Personal hygiene, laundry, etc. **(PH)**	_____
Other (specify) _____	_____
Other (specify) _____	_____
Total	**168 hours**

NAME:_____ DATE: _____

DAILY SUMMARY:

In class **(IC)**	_____	Television **(TV)**	_____
Studying **(ST)**	_____	Planned recreation/leisure **(PR)**	_____
Eating **(E)**	_____	Student organization/activities **(ACT)**	_____
Sleeping **(SL)**	_____	Personal hygiene, laundry, etc. **(PH)**	_____
Job **(J)**	_____	Other _____	_____
Travel time **(TT)**	_____	Other _____	_____
Telephone **(TEL)**	_____		

TIME	ACTIVITY	TIME	ACTIVITY
Midnight-12:29 am		Noon-12:29 pm	
12:30-12:59 am		12:30-12:59 pm	
1:00-1:29 am		1:00-1:29 pm	
1:30-1:59 am		1:30-1:59 pm	
2:00-2:29 am		2:00-2:29 pm	
2:30-2:59 am		2:30-2:59 pm	
3:00-3:29 am		3:00-3:29 pm	
3:30-3:59 am		3:30-3:59 pm	
4:00-4:29 am		4:00-4:29 pm	
4:30-4:59 am		4:30-4:59 pm	
5:00-5:29 am		5:00-5:29 pm	
5:30-5:59 am		5:30-5:59 pm	
6:00-6:29 am		6:00-6:29 pm	
6:30-6:59 am		6:30-6:59 pm	
7:00-7:29 am		7:00-7:29 pm	
7:30-7:59 am		7:30-7:59 pm	
8:00-8:29 am		8:00-8:29 pm	
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9:00-9:29 am		9:00-9:29 pm	
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10:00-10:29 am		10:00-10:29 pm	
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11:00-11:29 am		11:00-11:29 pm	
11:30-11:59 am		11:30-11:59 pm	